

AMENDMENTS TO THE CLAIMS

Please cancel claims 34-38, 53, 54 and 61. Please amend claims 26, 49, and 55-60, and please add new claims 91 and 92. Following is a listing of the claims, as amended.

1-25. (Cancelled)

26. (Currently Amended) A reactor for electrochemically processing a microelectronic workpiece comprising:

one or more walls defining a processing space for containing a processing fluid,
the one or more walls forming a processing cup having an open top;

a microelectronic workpiece support including one or more conductive members disposed to electrically contact the microelectronic workpiece to provide electrical power for electrochemical processing of the microelectronic workpiece, the microelectronic workpiece support being disposed proximate the open top of the processing cup to bring at least one portion of the microelectronic workpiece into contact with the processing fluid for electrochemical processing;

an electrode housing disposed in the processing cup and having an end that opens toward the microelectronic workpiece support, the electrode housing having an interior region configured to receive at least one electrode;

a pressure drop member disposed over the open end of the electrode housing;

at least one processing fluid inlet disposed exterior to the interior region of the electrode housing to provide a flow of the processing fluid into the processing space; and

at least one processing fluid outlet in fluid communication with the interior region of the electrode housing to generate a flow of the processing fluid through the pressure drop member and into the interior region of the electrode housing.

27. (Previously Presented) A reactor as claimed in claim 26, further comprising the at least one electrode, and wherein the at least one electrode comprises an anode in the electrochemical processing of the microelectronic workpiece.

28. (Previously Presented) A reactor as claimed in claim 26, further comprising the at least one electrode, and wherein the at least one electrode comprises a cathode in the electrochemical processing of the microelectronic workpiece.

29. (Original) A reactor as claimed in claim 26 wherein the at least one processing fluid outlet draws at least a portion of the flow of the processing fluid about the at least one electrode as the processing fluid exits from the interior region.

30. (Original) A reactor as claimed in claim 26 wherein at least a portion of the processing fluid entering the processing space exits from the processing space through the open top of the processing cup.

31. (Original) A reactor as claimed in claim 26 wherein the pressure drop member comprises a permeable membrane.

32. (Original) A reactor as claimed in claim 31 wherein, the permeable membrane is conical in shape having an apex directed toward the interior region of the electrode housing.

33. (Original) A reactor as claimed in claim 26 wherein the pressure drop member is conical in shape having an apex directed toward the interior region of the electrode housing.

34-48. (Cancelled)

49. (Currently Amended) An apparatus for use in electrochemical processing of a microelectronic workpiece comprising:

a processing space containing processing fluid;

at least one fluid inlet disposed to provide a flow of processing fluid to the processing space; and

an electrode assembly disposed in the processing space comprising:

an electrode housing having an open end;

a pressure drop member disposed over the open end of the electrode housing, the electrode housing and pressure drop member defining an interior electrode chamber;

an electrode disposed in the interior electrode chamber; and

at least one fluid outlet in fluid communication with the interior electrode chamber to thereby draw a flow of processing fluid through the pressure drop member and into the interior electrode chamber.

50. (Original) An apparatus as claimed in claim 49 wherein the pressure drop member comprises a permeable membrane.

51. (Original) An apparatus as claimed in claim 50 and further comprising a membrane frame disposed over the open end of the electrode housing, the permeable membrane being connected to the membrane frame.

52. (Original) An apparatus as claimed in claim 49 wherein the pressure drop member has a conical shape with an apex directed toward the interior electrode chamber.

53. (Cancelled)

54. (Cancelled)

55. (Currently Amended) The reactor of claim ~~53-91~~ wherein the permeable membrane has a generally conical shape, with an edge region of the permeable membrane disposed closer than a central region of the permeable-membrane to the workpiece support.

56. (Currently Amended) The reactor of claim ~~53-91~~ further comprising a ~~wherein the flow distribution element includes~~ having a multitude of openings through which at least one of the processing fluids can flow.

57. (Currently Amended) The reactor of claim ~~53-91~~ ~~wherein the further comprising a shield positioned between the first and second electrodes, the shield having includes~~ a rim and an opening disposed annularly inwardly from the rim.

58. (Currently Amended) The reactor of claim ~~53-57~~ wherein the shield is part of a field shaping element.

59. (Currently Amended) The reactor of claim ~~53~~91, further comprising the microelectronic workpiece.

60. (Currently Amended) The reactor of claim ~~53~~91, further comprising the first and second processing fluids.

61-90. (Cancelled)

91. (New) A reactor for electrochemically processing a microelectronic workpiece comprising:

a fluid vessel;

an ion selective membrane positioned in the vessel between a first fluid flow region and a second fluid flow region;

- a first fluid flow entry positioned to provide a first processing fluid to the first fluid flow region;
- a first fluid flow exit positioned to remove the first processing fluid from the first fluid flow region;
- a first electrode in fluid communication with the first fluid flow region;
- a second fluid flow entry positioned to provide a second processing fluid different than the first processing fluid to the second fluid flow region;
- a second fluid flow exit positioned to remove the second processing fluid from the second fluid flow region; and
- a second electrode positioned to contact the microelectronic workpiece while the second electrode and the microelectronic workpiece are in fluid communication with the second fluid flow region.

92. (New) The reactor of claim 91 wherein the ion selective membrane is only permeable to at least one ionic species of at least one of the first and second processing fluids.